REMARKS

Claims 1-6 are pending in the present application. Claims 1-6 have been amended herewith. Reconsideration of the claims is respectfully requested.

Applicants would initially like to thank the Examiner for taking the time to conduct a telephonic interview with Applicants' representative on December 14, 2004. While no agreement was reached, Applicants representative emphasized the authentication forwarding technique which mitigates client account requirements on multiple servers.

I. 35 U.S.C. § 103, Obviousness

The Examiner rejected Claims 1-6 under 35 U.S.C. § 103 as being unpatentable over U.S. Patent Number 6,052,681 issued to Richard Harvey (Harvey) in view of U.S. Patent Number 6,598,057 issued to Eric Synnestvedt (Synnestvedt) . This rejection is respectfully traversed.

Generally speaking, the present invention is directed to a technique for authenticating directory referral searches, sometimes referred to as LDAP referral searches. LDAP provides a referral model which allows client computers to ask an LDAP server a question and be told to contact another server – thus the concept of 'referral'. The LDAP clients are responsible for contacting these other referred to or referenced servers. One of the major problems associated with the referral mechanism is that the user needs to bind to the other referral/reference servers, with different distinguished names (DNs) existing on these reference servers. Without such binding, the referred search to the reference server would be an unauthenticated request. The present invention provides a technique for access to such referral/reference servers without requiring a physical user account to reside on each referral/reference server, and in particular provides a technique for authenticating referral searches. The ability to authenticate referral searches advantageously provides this ability to access referral/reference servers without requiring a physical user account to reside on each referral/reference server.

With respect to Claim 1 (and dependent Claim 2), such claim recites steps of (i) receiving a bind request from a referred search request; (ii) searching a local directory of a server for an entry corresponding to the distinguished name (DN) of the bind request; (iii) authenticating the bind request if an entry for the bind DN is located within the local directory; (iv) checking a defined reference server for the prefix of the bind DN, if the bind DN is not found within the local directory; (v) contacting the reference server for authentication, if the prefix of the bind DN is located on the reference server; and (vi) denying the bind request if both the local directory and the reference server do not contain an entry corresponding to the bind DN. In rejecting Claim 1, the Examiner states that Harvey teaches the recited receiving (step (i)) and searching (step (ii)) steps at Harvey column 32, line 53 – column 33, line 48. Applicants show that there, Harvey states:

> 5.5 Search Service
>
> The Search Service is the most complex of all X.500 services. Search arguments indicate where to start the search (baseObject), the scope of the search (subset), the conditions to apply (filter) and what information should be returned (selection). In addition, a flag is passed to indicate whether aliases should be dereferenced (searchAliases).
>
> The possible values for subset are baseObject, oneLevel and wholeSubtree. Base object indicates that the search filter will only be applied to attributes and values within the base object. OneLevel indicates the Search filter will be applied to the immediate subordinates of the base object. Whole subtree indicates the Search filter will be applied to the base object and all of its subordinates.
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> A simple example of a filter condition would be: surname="EVANS" or telephoneNumber PRESENT.
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> ---
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> X.500 definition
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> ---
>
> Argument Description
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> ---
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> baseObject The Distinguished Name of the baseObject
> subset baseObject, oneLevel or wholeSubtree
> filter search conditions
> searchAliases a flag to indicate whether aliases among

subordinates of the base object should be
dereferenced during the search.
selection EIS as for READ. The attributes and values to
be returned.
Common Arguments

Result Description

DistinguishedName The DN of the selected object (returned if an alias is dereferenced)
entries Attributes & values (as defined in selection) for the entries which satisfy the filter.
partialOutcomeQualifier An indication that an incomplete result was returned, eg, a time limit or size limit restriction.
Common Results

The search procedures for each search scope are outlined as follows:

Base Object
Perform a tree walk using the DIT table, resolving aliases if necessary.
Obtain the EID of the base object.
Apply the filter to attributes and values in the Search Table with the EID of the selected object.
If the filter condition is matched, return the Entry Information from the Entry Table.
If an alias is dereferenced, return the DN using the Tree Table to extract the PATH and the Name Table to build the DN.
One Level
Perform a tree walk using the DIT table, resolving aliases if necessary.
Obtain the EID of the base object.
Check to see if any aliases exist with PARENT=EID and if so resolve them to obtain an aliases dereferenced list.
Using the Search and DIT Tables, apply the filter (attribute/value conditions) and the scope (PARENT=EID of selected object and any aliases dereferenced). A list of matching EID's will be returned.
If an alias is dereferenced, return the DN using the Tree Table to extract the PATH and the Name Table to build the DN.
For each matching EID:
Return the Entry Information obtained from the Search Table using the Entry Table (as per Read Service).
Whole Subtree
Perform a tree walk using the DIT table, resolving aliases if necessary.
Obtain the EID of the base object.

Check to see if any aliases exist with PATH prefix matching the PATH of the selected object.
For each alias discovered, check to see if the alias points outside the current subtree and if it does repeat the previous step. Once all aliases have been resolved, a set of unique base objects will have been found (with no overlapping areas).
Using the Search and Tree Tables, apply the filter (attribute/value conditions) and the scope (PATH LIKE PATH prefix of the selected object) to each unique base object. A list of matching EID's will be returned.
If an alias is dereferenced during Navigation (not during searching), return the DN using the Tree Table to extract the PATH and the Name Table to build the DN.

As can be seen, this passage discusses a general X.500 Search Service. Such search service includes search arguments that indicate where to start the search, the scope of the search, the conditions to apply, and what information should be returned (column 32, lines 55-57). In addition, a flag is passed to indicate whether aliases should be dereferenced (column 32, lines 58-59). In contrast, Claim 1 expressly recites a step of "receiving a bind request from a *referred search request*" (emphasis added). The cited passage does not teach or suggest any type of bind request from a *referred search request*. To establish prima facie obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. MPEP 2143.03. *See also, In re Royka*, 490 F.2d 580 (C.C.P.A. 1974). As all claim limitations are not taught or suggested by the cited references, as shown above, a prima facie case of obviousness has not been established with respect to Claim 1.

Further with respect to Claim 1, Applicants urge that none of the cited references teach or suggest the claimed step of "searching the local directory for an entry corresponding to the distinguished name (DN) of the bind request". As the cited reference does not teach a bind request from a referred search request, there similar is no teaching of a distinguished name (DN) of such missing bind request from a referred search request, and thus there is no teaching or suggestion of searching a local directory for an entry corresponding to a (missing) distinguished name (DN) of a (missing) bind request from a referred search request. Rather, the cited Harvey reference teaches that a distinguished name is received as an input parameter of a Search Service request (the

basedObject, as shown in the X.500 definition table in column 33, lines 8-9). The requested search service is not associated with any type of bind request from a referred search request, as expressly recited in Claim 1. Therefore, it is further shown that a prima facie case of obviousness has not been established with respect to Claim 1.

Still further with respect to Claim 1, none of the cited references teach or suggest a claimed step of conditionally authenticating a bind request. Per Claim 1, the bind request is authenticated if an entry for the bind DN is located within a local directory of the server. In rejecting Claim 1, the Examiner states that this step is taught by Synnestvedt at column 6, lines 1-11. Applicants show that there, Synnestvedt states:

> Inputs to the Match and Generate Processes
>
> Inputs to the generation process include a boolean flag indicating the DOCSIS configuration file is being generated on behalf of the TFTP server 124. If the file is being generated for the TFTP server 124, then the generation request will be authenticated and LDAP directory lookups for certain objects will be restricted to the snapshot cache taken at server start-up. Otherwise, the authentication is skipped, the LDAP cache is not pre-populated, and directory lookups may read from the LDAP directory if the object is not found in the cache.

As can be seen, this cited passage describes a conditional authentication of a generation request. The 'condition' for which authentication is performed is whether a configuration file is being generated on behalf of a TFTO server. This is different from Claim 1 for at least two reasons. First, the cited reference teaches authentication of a generation request, whereas Claim 1 is with respect to authenticating a bind request from a referred search request. Second, the cited reference teaches that the conditional authentication is based upon whether a configuration file is being generated on behalf of a TFTO server, whereas Claim 1's conditional authentication is based upon whether an entry for a bind DN is located within a local directory. Thus, is it shown that the cited Synnestvedt reference does not teach or suggest the claimed conditional authentication step recited in Claim 1. Therefore, it is further shown that a prima facie case of obviousness has not been established with respect to Claim 1.

Still further with respect to Claim 1, such claim recites "checking a defined reference server for the prefix of the bind DN, if the bind DN is not found within local directory", and "contacting the reference server for authentication, if the prefix of the bind DN is located on the reference server". If the bind DN is not found within the local directory, a reference server is checked for the prefix of the bind DN and if this prefix is located on the reference server, the reference server is contacted for authentication. These claimed steps provide an ability to authenticate referral searches, and in particular advantageously provides an ability to access reference servers without requiring a physical user account to reside on each reference server. In rejecting Claim 1, the Examiner states that Harvey teaches checking a defined reference server for the prefix of the bind DN if it is not found within the local directory at column 33, lines 54-64. Applicants show that this passage merely states that a determination is made as to whether an alias points outside of the current tree. There is no discussion of any bind DN, prefix of a bind DN, or a reference server. Thus, this passage does not teach or otherwise suggest the claimed step of "checking a defined reference server for the prefix of the bind DN, if the bind DN is not found within the local directory". The Examiner states that the claimed step of contacting the reference server is also taught at this same Harvey passage. In addition to the reasons just listed (and in particular the fact that there is no concept of a reference server per these teachings), this passage merely teaches checking of a PATH prefix to return a list of matching EID's for base objects. There is no teaching or suggestion of any type conditional contact with a reference server (in particular, there is no teaching/suggestion of contacting the reference server if the prefix of the bind DN is located on the reference server). Because there is no teaching/suggestion of conditional contact with a reference server, it similarly follows that there is no teaching/suggestion of conditional contact with a reference server *for authentication*. Nor has the Examiner alleged any conditional contact with a reference server *for authentication*. Therefore, it is further shown that a prima facie case of obviousness has not been established with respect to Claim 1. Applicants have amended Claim 1 to further clarify this distinction and to further highlight advantages and features of the present invention that are not taught by the cited references – and in particular the advantageous authentication forwarding capability where a server contacts a reference

server for authentication. This claimed feature advantageously provides the ability to access referral/reference servers without requiring a physical user account to reside on each referral/reference server.

Still further with respect to Claim 1, such claim recites "denying the bind request if both the local directory and the reference server do not contain an entry corresponding to the bind DN". As can be seen, the denial of the bind request is based upon two conditions being met – (i) the local directory and (ii) the reference server not containing an entry corresponding to the bind DN. In rejecting Claim 1, the Examiner cites Synnestvedt column 8, lines 18-24 as teaching such claimed step. Applicants show that there, Synnestvedt states:

> Validate the source IP address of the TFTP request by comparing the source address of the TFTP request to the IP address of the cable modem obtained from the IP address lease object. **If the addresses do not match**, then the configuration file is not generated, an informational message is logged, and a status is returned indicating the request could not be authenticated.

As can be seen, this passage states that a status is returned indicating a request could not be authenticated if a source address of the TFTP request does not match the cable modem IP address. This is different from the claimed 'denying' step recited in Claim 1 for at least two reasons. First, the request for which authentication is denied is a TFTP request from a cable modem (column 7, lines 65-66; see also column 1, lines 10-19 where the TFTP protocol is described to be a file transfer protocol that can only read and write files from and to a remote server), whereas per Claim 1 a bind request is denied. Second, the 'denial' as taught by the cited reference is merely based upon whether two addresses match, whereas Claim 1 recites that the denial of the bind request is based upon *two conditions being met* – (i) the local directory and (ii) the reference server do not containing an entry corresponding to the bind DN. Therefore, it is further shown that a prima facie case of obviousness has not been established with respect to Claim 1.

Further with respect to dependent Claim 2, Applicants urge that none of the cited references teach or suggest the claimed feature of "wherein the defined reference server

contains root DN's; and server location". In rejecting Claim 2, the Examiner states that this is taught by Harvey at column 9, lines 1-28. Applicants show that there, Harvey states:

> X.500 defines its objects to be hierarchical. The relationships between objects follow a tree structure where each object has a parent object and each parent can have zero or more children. This relationship can be represented in a general PROPERTY table by the addition of a "parent name" column, which is used to store the name of the parent object (see Table 1.3b).

TABLE 1.3b

X.500 Property Table

object name	parent name	type	syntax	value
Datacraft	root	Organization	String	Datacraft
Datacraft	root	Address	Postal	PO Box 353
		Address		Croydon VIC
Chris Masters	Datacraft	Name	String	Chris
Chris Masters	Datacraft	Surname	String	MASTERS
Chris Masters	Datacraft	Title	String	Sales Manager
Chris Masters	Datacraft	Phone	Numeric	03 727-9456
Chris Masters	Datacraft	Mobile	Numeric	018 042671
Alana Morgan	Datacraft	Name	String	Alana
Alana Morgan	Datacraft	Surname	String	MORGAN
Alana Morgan	Datacraft	Title	String	Sales Support
Alana Morgan	Datacraft	Phone	Numeric	03 727-9455

> Note that the root of the tree has no parent. Thus, if both Chris and Alana work for Datacraft and Datacraft is a child of the root then we can say that Chris and Alana are children of Datacraft and that Datacraft is the parent of Chris and Alana.

This passage describes a property table showing various hierarchical relationships between objects. This is different from what is recited in Claim 2 for at least two reasons. First, this table has nothing to do with a defined reference server. Per Claim 2 (which depends upon Claim 1), the defined reference server is something that gets checked if a bind DN is not found within a local directory. The cited passage does not teach such a defined reference server, and thus doesn't teach or suggest a defined

reference server that contains root DN's and server location. Second, the cited passage does not teach any type of server location, as expressly recited in Claim 2. Therefore, it is further shown that a prima facie case of obviousness has not been established with respect to Claim 2.

With respect to Claims 3 (and dependent Claim 4) and 5 (and dependent Claim 6), Applicants traverse for similar reasons to those given above with respect to Claim 1.

Further with respect to dependent Claims 4 and 6, Applicants traverse for similar reasons to the further reasons given above with respect to dependent Claim 2.

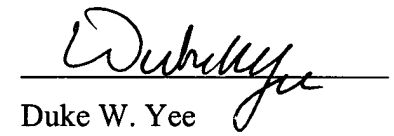
Therefore, the rejection of Claims 1-6 under 35 U.S.C. § 103 has been overcome.

II. Conclusion

It is respectfully urged that the subject application is patentable over the cited references and is now in condition for allowance. The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: 12/22/04

Respectfully submitted,



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